

Lesson
9.2c
Word Problems
Objectives

Solve word problems that involve finding the percentage for a part of a whole.

California Standards

NS 1.2: Interpret percents as a part of a hundred; find decimal and percent equivalents for common fractions and explain why they represent the same value; compute a given percent of a whole number.
MR 1.1: Analyze problems by identifying relationships, distinguishing relevant from irrelevant information, sequencing and prioritizing information, and observing patterns
MR 1.2: Determine when and how to break a problem into simpler parts.

Materials

- 10 x 10 grids
- Displayable 10 x 10 grids

Note

Students will be solving word problems involving percentages. In these word problems, the total is divided up into two or three parts and they are asked to find what percent the unknown parts are. For example, in a collection of 50 red, blue, and green marbles, 10 are red and 25 are blue. They are asked to find what percent of the total are green marbles.

To do this, they can first find the percentage of the total (50) that are red and blue marbles.

Number of red and blue marbles = $10 + 25 = 35$

Percentage of red and blue marbles = $\frac{35}{50} \times 100\% = 70\%$

Then they subtract the percentage of red and blue marbles from 100% (the total percentage) to find the percent of the total that are green marbles.

Percentage of green marbles = $100\% - 70\% = 30\%$

Or, they can find the number of green marbles first, and then the percentage.

Number of green marbles = $50 - 10 - 25 = 15$

Percentage of green marbles = $\frac{15}{50} \times 100\% = 30\%$

When doing word problems that involve finding the percentage for a part of the whole, make sure students know which amount the whole is; that is, what is the total amount that we are finding a percentage of. You may want to call the whole the *base*. It will be the amount that goes in the denominator of the fraction.

At this level, the whole is always the greater amount, but in higher level they will be using percentages that are greater than 100%, so the whole may be the smaller number. Therefore, remind students not to simply look for the larger number as the whole.

**Lesson
12.1**
Finding the Mean, Median, and Mode
Objectives

Identify the mean, median, and mode in a set of data and show that they may differ.

California Standards

SD 1.1 Know the concepts of mean, median, and mode; compute and compare simple examples to show that they may differ.

MR 1.2: Determine when and how to break a problem into simpler parts.

MR 2.3: Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to explain mathematical reasoning.

Vocabulary/Phrases

Mean Median
Mode Data
Line plot

Teaching Strategies
Looking at data

Draw the chart of the year salaries at the ABC Company on **Textbook p. 122** on the board. Ask students what questions can be asked about the data in the chart. Lead students to see that we can look for different information in the chart (e.g. which employee earns the most/least; average salary; most common salary, etc). Discuss what the children have contributed.

| Employee | Salary |
|----------------|-----------|
| Mr. Chowdhury | \$40,000 |
| Miss Gallipoli | \$40,000 |
| Mrs. Workman | \$40,000 |
| Mr. Cruz | \$50,000 |
| Mrs. Menchon | \$75,000 |
| Mr. Capozzi | \$100,000 |

Finding the mean

Ask students what the average salary is based on the data given. Have students calculate the average salary by adding the values and dividing by the number of values. Remind students that mean is another word for average.

Mean: \$57,500

Finding the median

Ask students what the middle level employee earns? Write the salaries in order from the least to the greatest on the board and have students write them in their notebooks. Have students calculate the median by marking off pairs of values from the ends and finding the average of the two middle values. Remind students that the median is the middle number in a set of data. If there are two middle numbers, the median is the average of the two values.

Median: \$45,000

**Lesson
13.1e**
Simplifying Algebraic Expressions
Objectives

Simplify simple algebraic expressions.

California Standards
AF 1.2: Use a letter to represent an unknown number; write and evaluate simple algebraic expressions in one variable by substitution.

AF 1.3: Know and use the distributive property in equations and expressions with variables.

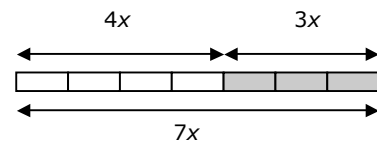
Teaching Strategies
Illustrating simplifying simple algebraic expressions

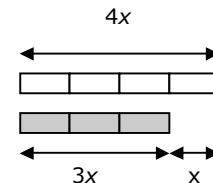
 Discuss **task 18, Textbook p. 146.**

 In (a), we start out with 4 bags, each containing x beads, and add 3 more bags. We now have 7 bags, each holding x beads, or $7x$ beads total. So, we can simplify $4x + 3x$, using addition.

 Draw a part-whole model. Label the unknown unit as x . So x is a unit, and we already know that 4 units + 3 units = 7 units. So $4x + 3x = 7x$.

Textbook p.146

 10. (a) $4x + 3x = (4 + 3)x = 7x$

 For (b), draw a comparison model; one bar with 4 units, and one with 3 units. The difference between the bars is 1 unit. Since each unit represents x beads, the difference is $1x$, or x beads. We do not have to write 1 in front of the letter x , since $1x = x$.

 (b) $4x - 3x = (4 - 3)x = x$

 Show students a similar problem which involves subtraction as take-away rather than as comparison. Tell students that we start with 4 bags of red beads, and take away 3 bags. How many beads are left? This time, we draw a part-whole diagram. The algebraic expression is the same, and we are left with 1 unit, x beads.
